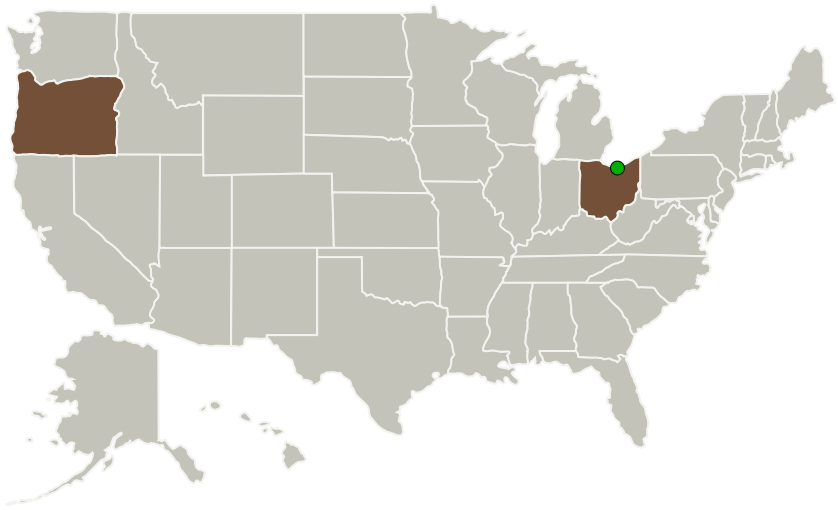
Scandate Cathode for High Power Long Life Electric Propulsion, Phase I

Completed Technology Project (2013 - 2013)

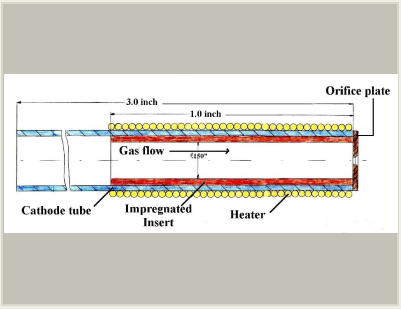
Project Introduction

Scandate cathodes are proposed as a way to boost performance and life for electric space propulsion systems. This company has recently demonstrated breakthrough performance on these cathodes in other formats. We have demonstrated emission of 5 Amps/cm2 at 850 degrees CB, which is 200 degrees C below that of conventional cathodes. At this temperature they should live at least 100,000 hours. This makes scandate cathodes a candidate for use in deep space missions. In Phase I we propose construction and testing of several hollow scandate cathodes. We propose to do both vacuum and ion environment characterization on them. In Phase II we will begin active collaboration with NASA to test these cathodes in complete ion thrusters.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
e-beam, Inc.	Lead Organization	Industry Veteran-Owned Small Business (VOSB)	Beaverton, Oregon
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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Primary U.S. Work Locations	
Ohio	Oregon

Project Transitions

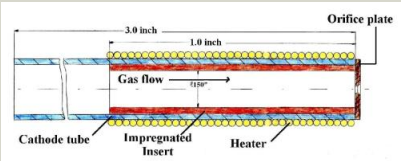
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138483)*

Images



Project Image
Scandate Cathode for High Power Long Life Electric Propulsion *(https://techport.nasa.gov/image/127370)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
e-beam, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Bernard K Vancil

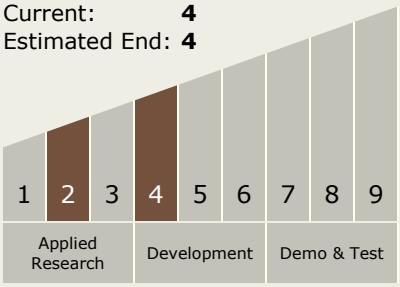
Co-Investigator:
Bernard Vancil

Scandate Cathode for High Power Long Life Electric Propulsion, Phase I

Completed Technology Project (2013 - 2013)

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.2 Electrostatic

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System